IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Application of:	Group Art Unit: 2626
Reznik, Yuriy A.	Confirmation No. 1483
Application No.: 10/826,469	Examiner: HE, Jialong
Filed: April 16, 2004	
For: DIGITAL AUDIO SIGNAL COMPRESSION METHOD AND APPARATUS	

APPELLANT'S BRIEF

TO THE COMMISSIONER FOR PATENTS:

Jurisdictional Statement

This communication is submitted in response to the Final Office Action dated September 17, 2008 (hereinafter "Final Office Action"), the Advisory Action dated November 24, 2008 (hereinafter "Advisory Action"), and the Notice of Panel Decision from Pre-Appeal Brief Review dated August 26, 2009. This Brief pertains to the captioned patent application identified above. This Brief is being filed under the provisions of 37 C.F.R. § 41.37 and the Board of Patent Appeals and Interferences therefore has jurisdiction over this appeal. The Filing Fee corresponding to this Appeal Brief, as set forth in 37 C.F.R. § 41.20(b)(2), accompanies this communication.

TABLE OF CONTENTS

TABLE OF AUTHORITIES

I. REAL PARTY IN INTEREST

The rights of the inventor in this application have been assigned to RealNetworks, Inc. of Seattle, Washington by way of assignment from Yuriy A. Reznik, who is the named inventor and is captioned in the present Brief.

II. RELATED APPEALS AND INTERFERENCES

Appellant, Appellant's legal representative, and the above-identified assignee are unaware of other appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in the present appeal.

III. STATUS OF THE CLAIMS

Claims 1-31 are pending and currently stand rejected under 35 U.S.C. 103. Appellant appeals the rejections of each of Claims 1-31.

IV. STATUS OF AMENDMENTS

A full set of claims as currently entered is attached in Appendix A. Subsequent to final rejection; the claims were amended as follows:

- Claims 19, 26 and 29 were amended.

More specifically, Claims 19, 26 and 29 were amended to address objection to informalities. These amendments have been entered.

As indicated in the Advisory Action, Box 13, and in the continuation thereof, Examiner indicates that objections to Claims 19, 26 and 29 have been withdrawn.

V. SUMMARY OF CLAIMED SUBJECT MATTER

A. Claim 1

Independent Claim 1 claims a method comprising:

applying a prediction filter to a unit of audio signal data;

determining a distribution substantially representative of residual data generated as part of said applying of a prediction filter to the unit of audio signal data, wherein determining a distribution comprises determining a plurality of statistical measures, including at least one of a skewness of the distribution, and a kurtosis of the distribution; and

transmitting in substance the unit of audio signal data to a recipient, utilizing the determined distribution to assist in reducing the amount of data having to be transmitted.

A general overview of one embodiment of a process similar to that claimed in Claim 1 is depicted in Figure 1, and described at least in Paragraphs [0015] – [0051] on pages 4-9.

Applying a prediction filter to a unit of audio signal data is illustrated at least in block 110 of Figure 1 and described at least in paragraph [0018] on page 5.

Determining a distribution substantially representative of residual data generated as part of said applying of a prediction filter to the unit of audio signal data is illustrated at least in block 118 of Figure 1 and described at least in paragraph [0020] on pages 5 and 6.

Wherein determining a distribution comprises determining a plurality of statistical measures, including at least one of a skewness of the distribution, and a kurtosis of the distribution is described at least in paragraph [0021] on page 6.

Transmitting in substance the unit of audio signal data to a recipient, utilizing the determined distribution to assist in reducing the amount of data having to be transmitted is described at least in paragraph [0022] on page 6.

B. Claim 19

Independent Claim 19 claims an apparatus comprising:

a prediction filter;

a transmission unit; and

a control unit coupled to the prediction filter and the transmission unit, and adapted to apply the prediction filter to a unit of audio signal data to a recipient, and to use the transmission unit to transmit in substance the unit of audio signal data to the recipient, utilizing a distribution substantially representative of the residual data generated by the prediction filter and a plurality of statistical measures of the distribution to assist in reducing the amount of data having to be transmitted by the transmission unit, wherein the plurality of statistical measures include at least one of a skewness of the distribution, and a kurtosis of the distribution.

A general overview of one embodiment of an apparatus similar to that claimed in Claim 19 is depicted in Figure 2, and described at least in Paragraphs [0052] – [0057] on pages 9-10.

An apparatus comprising a prediction filter is illustrated at least in block 208 of Figure 2 and described at least in paragraph [0054] on page 9.

An apparatus comprising a transmission unit is illustrated at least in block 202 of Figure 2 and described at least in paragraph [0053] on page 9.

An apparatus comprising a control unit is illustrated at least in block 218 of Figure 2 and described at least in paragraph [0054] on page 9.

Applying the prediction filter to a unit of audio signal data to a recipient is described at least in paragraph [0054] on page 9 and paragraphs [0018] and [0019] on page 5.

Using the transmission unit to transmit in substance the unit of audio signal data to the recipient is described at least in paragraph [0022] on page 6.

Utilizing a distribution substantially representative of the residual data generated by the prediction filter and a plurality of statistical measures of the distribution to assist in reducing the amount of data having to be transmitted by the transmission unit is described at least in paragraph [0020] on pages 5 and 6.

Wherein the plurality of statistical measures includes at least one of a skewness of the distribution, and a kurtosis of the distribution is described at least in paragraph [0021] on page 6.

C. Claim 26

Independent Claim 26 claims an apparatus comprising:

a receiver unit;

a decoder coupled to the receiver unit;

and a control unit coupled to the receiver unit and the decoder, and adapted to use the decoder to recover a unit of audio signal data from an encoded transmission of the unit of audio signal received by the receiver unit, the encoded transmission including encoded most significant

bits (MSB) and unencoded least significant bits (LSB) of residual samples of residual data generated by a prediction filter applied to the unit of audio signal data, and wherein the encoded transmission further includes a distribution descriptor constructed based on statistical measures of the residual samples, including at least one of a skewness of the distribution of the residual samples, and a kurtosis of the distribution of the residual samples.

A general overview of one embodiment of an apparatus similar to that claimed in Claim 26 is depicted in Figure 2, and described at least in Paragraphs [0052] – [0057] on pages 9-10.

An apparatus comprising a receiver unit is illustrated at least in block 226 of Figure 2 and described at least in paragraph [0053] on page 9.

An apparatus comprising a decoder coupled to the receiver unit is illustrated at least in block 228 of Figure 2 and described at least in paragraph [0055] on page 10.

A control unit coupled to the receiver unit and the decoder is illustrated at least in block 218 of Figure 2 and described at least in paragraph [0054] on page 9.

The control unit adapted to use the decoder to recover a unit of audio signal data from an encoded transmission of the unit of audio signal received by the receiver unit is illustrated at least in block 228 of Figure 2 and described at least in paragraph [0055] on page 10.

The encoded transmission including encoded most significant bits (MSB) and unencoded least significant bits (LSB) of residual samples of residual data generated by a prediction filter applied to the unit of audio signal data is illustrated at least in block 228 of Figure 2 and described at least in paragraphs [0054] and [0055] on pages 9-10.

Wherein the encoded transmission further includes a distribution descriptor constructed based on statistical measures of the residual samples, including at least one of a skewness of the distribution of the residual samples, and a kurtosis of the distribution of the residual samples is described at least in paragraph [0021] on page 6.

D. Claim 29

Independent Claim 29 claims an apparatus comprising:

A system comprising:

a prediction filter;

a transmission unit;

a receiver unit;

a decoder unit; and

a control unit coupled to the prediction filter and the transmission unit, and adapted to apply the prediction filter to a first unit of audio signal data to a recipient, and to use the transmission unit to transmit in substance the first unit of audio signal data to the recipient, utilizing a distribution substantially representative of the residual data generated by the prediction filter and a plurality of statistical measures of the distribution to assist in reducing the amount of data having to be transmitted by the transmission unit, wherein the plurality of statistical measures include at least one of a skewness of the distribution, and a kurtosis of the distribution, the control unit being further coupled to the receiver unit and the decoder unit, and adapted to use the decoder to recover a second unit of audio signal data from an encoded transmission of the second unit of audio signal received by the receiver unit, the encoded transmission included encoded most significant bits (MSB) and unencoded least significant bits (LSB) of residual

samples of residual data generated by a prediction filter applied to the second unit of audio signal data.

A general overview of one embodiment of an apparatus similar to that claimed in Claim 29 is depicted in Figure 2, and described at least in Paragraphs [0052] – [0057] on pages 9-10.

An apparatus comprising a prediction filter is illustrated at least in block 208 of Figure 2 and described at least in paragraph [0054] on page 9.

An apparatus comprising a transmission unit is illustrated at least in block 202 of Figure 2 and described at least in paragraph [0053] on page 9.

An apparatus comprising a receiver unit is illustrated at least in block 226 of Figure 2 and described at least in paragraph [0053] on page 9.

An apparatus comprising a decoder unit is illustrated at least in block 228 of Figure 2 and described at least in paragraph [0055] on page 10.

An apparatus comprising a control unit coupled to the prediction filter and the transmission unit is illustrated at least in block 230 of Figure 2 and described at least in paragraph [0055] on page 9.

The control unit adapted to apply the prediction filter to a first unit of audio signal data to a recipient, and to use the transmission unit to transmit in substance the first unit of audio signal data to the recipient is illustrated at least in block 228 of Figure 2 and described at least in paragraph [0054] on pages 9-10.

The control unit utilizing a distribution substantially representative of the residual data generated by the prediction filter and a plurality of statistical measures of the distribution to assist

in reducing the amount of data having to be transmitted by the transmission unit is described at least in paragraph [0054] on pages 9-10.

Wherein the plurality of statistical measures includes at least one of a skewness of the distribution, and a kurtosis of the distribution is described at least in paragraph [0021] on page 6.

The control unit being further coupled to the receiver unit and the decoder unit is illustrated at least in block 230 of Figure 2 and described at least in paragraph [0055] on page 9.

The control unit adapted to use the decoder to recover a second unit of audio signal data from an encoded transmission of the second unit of audio signal received by the receiver unit described at least in paragraph [0055] on page 9.

The encoded transmission included encoded most significant bits (MSB) and unencoded least significant bits (LSB) of residual samples of residual data generated by a prediction filter applied to the second unit of audio signal data is illustrated at least in block 228 of Figure 2 and described at least in paragraphs [0054] and [0055] on pages 9-10.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

In the Final Office Action, claims were rejected as follows:

- Claims 19, 26, and 29 were objected to because of informalities;
- Claims 1-4, 7-15, and 19-31 were rejected as being unpatentable under 35 U.S.C. § 103(a) over Robinson's Technical Report, "SHORTEN: Simple lossless and near-lossless waveform compression" (hereinafter "*Robinson*") in view of Published U.S. Patent Application Pub. No. 2002/0094535 to Nadon et al (hereinafter "*Nadon*");
- Claims 5-6 were rejected as being unpatentable under 35 U.S.C. § 103(a) over *Robinson* in view of *Nadon* and further in view of Hasegawa-Johnson et al.'s paper, "Speech coding: fundamentals and applications" December 2002 (hereinafter "*Johnson*");
- Claims 16 and 18 were rejected as being unpatentable under 35 U.S.C. § 103(a) over *Robinson* in view of *Nadon* and further in view of U.S. Patent No. 6,094,636 to Kim (hereinafter "*Kim*");
- Claim 17 was rejected as being unpatentable under 35 U.S.C. § 103(a) over *Robinson* in view of *Nadon* and further in view of U.S. Patent No. 3,694,813 to Loh (hereinafter "*Loh*").

After the Final Office Action, but prior to this Appeal, Claims 19, 26, and 29 were amended. Examiner has accordingly withdrawn the objection to Claims 19, 26, and 29.

The issues to be reviewed in this appeal are therefore as follows:

1. Is *Nadon* non-analogous art because it is in an entirely different field of art from the present application and is the rejection of Claims 1-31 therefore improper

under 35 U.S.C. §103 and erroneous? (*see* Final Office Action pages 3-23; *see also* Advisory Action page 2).

2. Would it have been predictable for one having ordinary skill in the art to combine *Robinson* and *Nadon* where *Nadon* is non-analogous art in an entirely different field of art compared to *Robinson,* and is the rejection of Claims 1-31 therefore improper under 35 U.S.C. §103 and erroneous? (*see* Final Office Action pages 3-23; *see also* Advisory Action page 2).

3. Would a combination of *Robinson* and *Nadon* teach away from each other and remove a motivation to combine *Robinson* and *Nadon,* and is the rejection of Claims 1-31 therefore improper under 35 U.S.C. §103 and erroneous?

VII. STATEMENT OF FACTS

Claims 1-31 are pending. Claims stand rejected under 35 U.S.C. §103 from a Final Office Action dated September 17, 2008. An Advisory Action was issued dated November 24, 2008, wherein rejections of Claims 1-31 under 35 U.S.C. §103 were maintained. A Notice of Panel Decision from Pre-Appeal Brief Review was issued August 26, 2009, wherein rejections of Claims 1-31 under 35 U.S.C. §103 were further maintained.

VIII. ARGUMENT

Issue 1: Is *Nadon* non-analogous art because it is in an entirely different field of art from the present application and is the rejection of Claims 1-31 therefore improper under 35 U.S.C. §103 and erroneous.

To rely on a reference under 35 U.S.C. §103, the reference must be analogous prior art. MPEP 2141.01(a). To determine whether a reference is analogous art, "the similarities and differences in structure and function of the inventions" carries great weight. *Id.* (*quoting In re Ellis*, 476 F.2d 1370, 1372, 177 USPQ 526, 527 (CCPA 1973)).

Furthermore, "The determination of what arts are analogous to a particular claimed invention… depends upon the **necessary essential function or utility of the subject matter** covered by the claims…." Two examples are given: "a tea **mixer** and a concrete **mixer** may both be regarded as relating to the **mixing** art, this being the necessary function of each. Similarly, a brick-**cutting** machine and a biscuit **cutting** machine may be considered as having the same necessary function." MPEP 904.01(c).

For at least the reasons discussed below, Appellant respectfully submits that it was clear error for the Office Action to apply *Nadon* as analogous art that relates to the subject matter of the present Claims 1-31.

For example, Claim 1 is directed to a method of compressing audio data for transmission according to the following recitations:

> applying a prediction filter to a unit of audio signal data;
> determining a distribution substantially representative of residual data generated as part of said applying of a prediction filter to the unit of audio signal data, wherein determining a distribution comprises determining a plurality of statistical measures, including at least one of a skewness of the distribution, and a kurtosis of the distribution; and
> transmitting in substance the unit of audio signal data to a recipient, utilizing the determined distribution to assist in reducing the amount of data having to be transmitted.

Thus, the field of endeavor surrounding Claim 1 is related to the audio compression and transmission arts. Independent Claims 19, 26, and 29 relate to an apparatus having similar elements and are related to audio compression and transmission hardware.

By contrast, *Nadon* is directed to an entirely different field and utility, namely "a process for making evaluations which objectify analyses of **data obtained from hybridization arrays** [and] removing **systematic error present in replicate genomic samples**." Field of the Invention. *Nadon* goes on to describe the subject matter towards which it is directed by "Array-based genetic analyses start with a large library of cDNAs or oligonucleotides (probes), immobilized on a substrate. The probes are hybridized with a single labeled sequence, or a labeled complex mixture derived from a tissue or cell line messenger RNA (target)." Col. 1 lines 27-30. Thus, *Nadon's* field of endeavor is related to genomics and array-based genetic analysis.

Accordingly, Appellant respectfully submits that it was clear error for the Office Action to treat *Nadon*, which is directed to genomics, as analogous art to Claim 1, which is directed to audio compression and transmission.

Indeed, Appellant respectfully submits that one of ordinary skill in the art who is considering the problem of compressing audio for transmission (as in Claim 1) would be completely **unaware** of references from genomics, a **completely unrelated** field of endeavor. Therefore, one of ordinary skill in the art of audio compression could not possibly have had a motivation to make the asserted combination.

Accordingly, Appellant respectfully submits that because *Nadon* is inappropriately applied, the rejection of Claims 1-31 based on *Nadon,* is erroneous, and that Claims 1-31 are therefore in condition for allowance.

Issue 2: **Would it have been predictable for one having ordinary skill in the art to combine *Robinson* and *Nadon,* where *Nadon* is non-analogous art in an entirely different field of art compared to *Robinson,* and is the rejection of Claims 1-31 therefore improper under 35 U.S.C. §103 and erroneous.**

Obviousness can be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so. MPEP §2143.01 citing *In re Kahn*, 441 F.3d 977, 986, 78 USPQ2d 1329, 1335 (Fed. Cir. 2006). The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art, and all teachings in the prior art must be considered to the extent that they are in analogous arts. *Id.* Citing *In re Young*, 927 F.2d 588, 18 USPQ2d 1089 (Fed. Cir. 1991). The mere fact that references can be combined or modified does not render the resultant combination obvious unless the results would have been predictable to one of ordinary skill in the art. *Id.* Citing *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, ___, 82 USPQ2d 1385, 1396 (2007).

As discussed above, *Nadon* is directed to an entirely different field and utility, namely "a process for making evaluations which objectify analyses of **data obtained from hybridization arrays** [and] removing **systematic error present in replicate genomic samples.**" *Field of the Invention. Nadon* goes on to describe the subject matter towards which it is directed by "Array-based genetic analyses start with a large library of cDNAs or oligonucleotides (probes), immobilized on a substrate. The probes are hybridized with a single labeled sequence, or a labeled complex mixture derived from a tissue or cell line messenger RNA (target)." Col. 1 lines 27-30. Thus, *Nadon's* field of endeavor is related to genomics and array-based genetic analysis.

In contrast, *Robinson* is directed to a "program that performs compression of waveform files such as audio data." *Abstract. Robinson,* goes on to describe a program wherein a "simple predictive model of the waveform is used followed by Huffman coding of the prediction

residuals ... [that] is both fast and near optimal for many commonly occurring waveform signals. This framework is then extended to lossy coding under the conditions of maximizing the segmental signal to noise ratio on a per frame basis and coding to a fixed acceptable signal to noise ration." Accordingly, *Robinson* is directed to audio waveform compression. *Abstract*

The subject matter of these references is clearly different, and it is difficult to see how genomics and array-based genetic analysis would be considered analogous to audio waveform compression. Here, even if such disparate teachings could be combined, there is certainly no teaching, suggestion, or motivation in these teachings to combine the teachings. Moreover, such a combination, as suggested by the Office Action, would not have been predictable or obvious to one having ordinary skill in the art.

Indeed, Appellant respectfully submits that one of ordinary skill in the art who is considering the problem of compressing audio waveform (as in *Robinson)* would be completely **unaware** of references from genomics, a **completely unrelated** field of endeavor. Therefore, one of ordinary skill in the art of audio compression could not possibly have had a motivation to make the asserted combination. The same is true for one of ordinary skill in the art of genetic analysis.

Accordingly, Appellant submits that *Robinson* and *Nadon* are not analogous art, and therefore, one of ordinary skill in the art would not be motivated to combine *Robinson* and *Nadon.* Moreover, such a combination would not be predictable or obvious, especially given that one having ordinary skill in one of these arts would be unaware of the reference from the other art. Appellant therefore submits that because there is no motivation to combine *Robinson* and *Nadon,* the Office Action fails to establish a *prima facie* case of obviousness, and that Claims 1-31 are in condition for allowance.

Issue 3: **Would a combination of *Robinson* and *Nadon* teach away from each other and remove a motivation to combine *Robinson* and *Nadon,* and is the rejection of Claims 1-31 therefore improper under 35 U.S.C. §103 erroneous?**

A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. MPEP §2141.02 Citing *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. MPEP § 2143.01 Citing *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). Furthermore, "The determination of what arts are analogous to a particular claimed invention... depends upon the **necessary essential function or utility of the subject matter** covered by the claims...." MPEP 904.01(c).

Appellant respectfully submits that amended Claims 1-31 are not obvious in light of the cited references because the subject matter of Claims 1-31 and *Robinson* have an entirely different **essential function or utility** from the subject matter of *Nadon*, and therefore teach away from each of these because *Nadon* would be modified unsatisfactory for its intended purpose.

According to the essential function test mandated by the MPEP as described above, *Nadon* is not analogous art to Claims 1-31 or *Robinson* because *Nadon*'s necessary function is **detecting and removing errors from genomic samples**. In other words, *Nadon* begins with a set of data that contains errors, and its essential function is removing those errors.

By contrast, the necessary function of Claim 1-31 and *Robinson,* is **compressing audio signal data for transmission**, not removing errors. Indeed, the inherent point of audio compression is to minimize the data that needs to be transmitted so that a set of audio signal data

can be recreated, wherein the re-created signal **preserves salient characteristics of the original**. In other words, the necessary function of an audio compressor, such as that claimed in Claims 1-31, is to preserve data, not to discard errors, as in *Nadon*.

Accordingly, modification of *Nadon* to reach the elements of Claims 1-31 would render *Nadon* unsatisfactory for its intended purpose or its essential function or utility. Therefore, there would be no motivation to combine *Nadon* and *Robinson* and the Office Action accordingly fails to establish a *prima facie* case of obviousness; and therefore Claims 1-31 are in condition for allowance.

IX. SUMMARY

For at least the reasons discussed above, Appellant submits that all pending claims are in condition for allowance. Accordingly, early and favorable action allowing all of the pending claims and passing this application to issue is respectfully requested.

We believe the appropriate fees have been paid. If, however, insufficient fee payment or fee overpayment occurs, the amount may be withdrawn or deposited from/to Axios Law's deposit account. The deposit account number is 50-4051.

Respectfully submitted,
AXIOS LAW

Date: September 28, 2009

by: /Dylan O. Adams/
Dylan O. Adams
Reg. No.: 56,289

AXIOS LAW GROUP
1525 Fourth Avenue
8th Floor
Seattle, WA 98101
Telephone: 206-217-2200

X. CLAIMS APPENDIX A

1. (Rejected) A method comprising:

applying a prediction filter to a unit of audio signal data;

determining a distribution substantially representative of residual data generated as part of said applying of a prediction filter to the unit of audio signal data, wherein determining a distribution comprises determining a plurality of statistical measures, including at least one of a skewness of the distribution, and a kurtosis of the distribution; and

transmitting in substance the unit of audio signal data to a recipient, utilizing the determined distribution to assist in reducing the amount of data having to be transmitted.

2. (Rejected) The method of claim 1, wherein the method further comprises receiving a portion of a stream of audio signal data; and partitioning the stream of the audio signal data into a plurality of units of audio data.

3. (Rejected) The method of claim 2, wherein the partitioning comprises partitioning the stream of the audio signal data into a plurality of fixed-size units of audio signal data.

4. (Rejected) The method of claim 2, wherein the method further comprises

selecting one of the plurality of units of audio signal data partitioned from the portion of the stream of audio signal data;

performing said applying, determining and transmitting operations of claim 1 for the selected unit of audio signal data; and

repeating the selecting and performing until all units of the partitioned audio signal data have been transmitted in substance to the recipient.

5. (Rejected) The method of claim 2, wherein the method further comprises

further partitioning the selected one of the first plurality of units of audio signal data into a second plurality of units of audio signal data;

selecting one of the second plurality of units of audio signal data;

performing said applying, determining and transmitting of claim 1 for the selected one of the second plurality of units of audio signal data; and

repeating the selecting of the second plurality of units of audio signal data, and the performing of said applying, determining and transmitting of claim 1 for the selected one of the second plurality of units of audio signal data, until all of the second plurality of units of audio signal data have been transmitted in substance to the recipient.

6. (Rejected) The method of claim 5, wherein the method further comprises repeating the further partitioning, the selecting, the performing, and the repeating of claim 5, until all of the first plurality of units of audio signal data have been transmitted in substance to the recipient.

7. (Rejected) The method of claim 1, wherein the method further comprises transmitting a plurality of parameters of the prediction filter to the recipient.

8. (Rejected) The method of claim 7, wherein

the applying comprises applying a linear prediction filter having a prediction order p, and prediction coefficients a.sub.1, . . . , a.sub.p; and

the transmitting of the parameters of the prediction filter comprises transmitting the prediction order p, information about quantization step size used to quantize prediction coefficients, and quantized versions of the prediction coefficients a.sub.1, . . . , a.sub.p.

9. (Rejected) The method of claim 1, wherein

the residual data comprises a plurality of residual samples;

the determining of the statistical measures further comprises determining a variance of the residual samples or an estimate of the variance;

forming a residual data distribution descriptor based at least in part on the determined variance of the residual samples or its estimate, the distribution descriptor identifying the substantially representative distribution to the recipient; and

the transmitting comprises transmitting the residual data distribution descriptor to the recipient.

10. (Rejected) The method of claim 9, wherein

the determining of the statistical measures further comprises determining a mean of the residual samples; and

the forming of the residual data distribution descriptor is further based on the determined mean of the residual samples.

11. (Rejected) The method of claim 9, wherein

the forming of the residual data distribution descriptor is further based on the determined at least selected one of the skewness and the kurtosis of the residual samples.

12. (Rejected) The method of claim 1, wherein

the residual data comprises a plurality of residual samples;

the method further comprises determining a number of least significant bits (LSB) of each residual sample to be sent to the recipient; and

the transmitting comprises transmitting to the recipient

how many LSB of each residual sample will be transmitted to the recipient and

the appropriate number of LSB of each of the residual samples.

13. (Rejected) The method of claim 12, wherein the method further comprises determining a reconstructed inverse-quantized mean value of the residual samples, and the determining of the LSB of each residual sample to be sent to the recipient is performed based at least in part on the determined reconstructed inverse-quantized mean value of the residual samples.

14. (Rejected) The method of claim 1, wherein

the residual data comprises a plurality of residual samples, each having a plurality of data bits;

the method further comprises encoding the most significant bits (MSB) of each of the residual samples, employing codes constructed using the determined substantially representative distribution; and

the transmitting comprises transmitting the encoded MSB of the residual samples to the recipient.

15. (Rejected) The method of claim 14, wherein the method further comprises constructing the codes using the distribution, the constructed codes being Huffman codes.

16. (Rejected) The method of claim 14, wherein the method further comprises constructing the codes using the distribution, the constructed codes being run-length codes.

17. (Rejected) The method of claim 14, wherein the method further comprises constructing the codes using the distribution, the constructed codes being Gilbert-Moore codes.

18. (Rejected) The method of claim 14, wherein the method further comprises constructing the codes using the distribution, the constructed codes being arithmetic codes.

19. (Rejected) An apparatus comprising

a prediction filter;

a transmission unit; and

a control unit coupled to the prediction filter and the transmission unit, and adapted to apply the prediction filter to a unit of audio signal data to a recipient, and to use the transmission unit to transmit in substance the unit of audio signal data to the recipient, utilizing a distribution substantially representative of the residual data generated by the prediction filter and a plurality of statistical measures of the distribution to assist in reducing the amount of data having to be transmitted by the transmission unit, wherein the plurality of statistical measures include at least one of a skewness of the distribution, and a kurtosis of the distribution.

20. (Rejected) The apparatus of claim 19, where the control unit is adapted to use the transmission unit to transmit a plurality of parameters of the prediction filter to the recipient.

21. (Rejected) The apparatus of claim 19, where the control unit is adapted to use the transmission unit to transmit a residual data distribution descriptor, formed using at least some of the statistical measures of the residual data, to the recipient, the distribution descriptor identifying the substantially representative distribution, and the statistical measures are employed to identify the substantially representative distribution.

22. (Rejected) The apparatus of claim 19, wherein the apparatus further comprises a computation unit coupled to the prediction filter and the control unit, and adapted to compute at least a plurality of statistical measures for the residual data generated by the prediction filter.

23. (Rejected) The apparatus of claim 19, where the residual data comprises a plurality of residual samples having data bits, and the control unit is adapted to use the transmission unit to transmit a plurality of the least significant bits (LSB) of each of the residual sample, to the recipient, the LSB of each of the residual sample transmitted being determined based at least in part on the determined substantially representative distribution.

24. (Rejected) The apparatus of claim 19, where the residual data comprises a plurality of residual samples having data bits, and the control unit is adapted to use the transmission unit to transmit a plurality of codes, encoding the most significant bits (MSB) of each of the residual sample, to the recipient, the codes being constructed based at least in part on the determined substantially representative distribution of the residual samples.

25. (Rejected) The apparatus of claim 24, wherein the apparatus further comprises an encoder adapted to encode the MSB of each of the residual samples, using codes constructed from determined substantially representative distribution of the residual samples.

26. (Rejected) An apparatus comprising

a receiver unit;

a decoder coupled to the receiver unit; and

a control unit coupled to the receiver unit and the decoder, and adapted to use the decoder to recover a unit of audio signal data from an encoded transmission of the unit of audio signal received by the receiver unit, the encoded transmission including encoded most significant bits (MSB) and unencoded least significant bits (LSB) of residual samples of residual data generated by a prediction filter applied to the unit of audio signal data, and wherein the encoded transmission further includes a distribution descriptor constructed based on statistical measures of the residual samples, including at least one of a skewness of the distribution of the residual samples, and a kurtosis of the distribution of the residual samples.

27. (Rejected) The apparatus of claim 26, wherein the control unit is further adapted to at least contribute in causing a inverse-quantized mean of the residual samples to be reconstructed.

28. (Rejected) The apparatus of claim 26, wherein the distribution descriptor identifies the substantially representative distribution of the residual samples, and the control unit is further

adapted to at least contribute in causing the substantially representative distribution to be available to the decoder for use to decode a plurality of codes received by the receiver unit, the codes encoding the MSB of the residual samples.

29. (Rejected) A system comprising:

a prediction filter;

a transmission unit;

a receiver unit;

a decoder unit; and

a control unit coupled to the prediction filter and the transmission unit, and adapted to apply the prediction filter to a first unit of audio signal data to a recipient, and to use the transmission unit to transmit in substance the first unit of audio signal data to the recipient, utilizing a distribution substantially representative of the residual data generated by the prediction filter and a plurality of statistical measures of the distribution to assist in reducing the amount of data having to be transmitted by the transmission unit, wherein the plurality of statistical measures include at least one of a skewness of the distribution, and a kurtosis of the distribution, the control unit being further coupled to the receiver unit and the decoder unit, and adapted to use the decoder to recover a second unit of audio signal data from an encoded transmission of the second unit of audio signal received by the receiver unit, the encoded transmission included encoded most significant bits (MSB) and unencoded least significant bits (LSB) of residual samples of residual data generated by a prediction filter applied to the second unit of audio signal data.

30. (Rejected) The system of claim 29, further comprising a transceiver unit comprising the transmitter and receiver units.